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(54) Abstract Title
Lot supply system for a production line

(57) A lot supply system includes a plurality of processing units 17-1 to 17-3, a supply unit 19, a plurality of counters 14, and a supply controller 13. A lot may be a batch of semiconductor wafers. Each processing unit outputs a lot supply request to the supply unit and performs a predetermined process upon a lot supplied to it. The counters are designated to individual processing units and count product lots supplied thereto. When the count of the counter reaches a preset value, the supply controller supplies a further lot to the requesting processing unit and this forms a reference lot which is measured under quality control in a unit 18. The result of measuring is representative of the lots counted so far and the counter is then reset. As an alternative to counting the lots, elapsed time measuring means (74, Figure 7) measures the time since it was last reset and, since the processing time for each lot is substantially the same, the elapsed time represents a fixed number of lots.

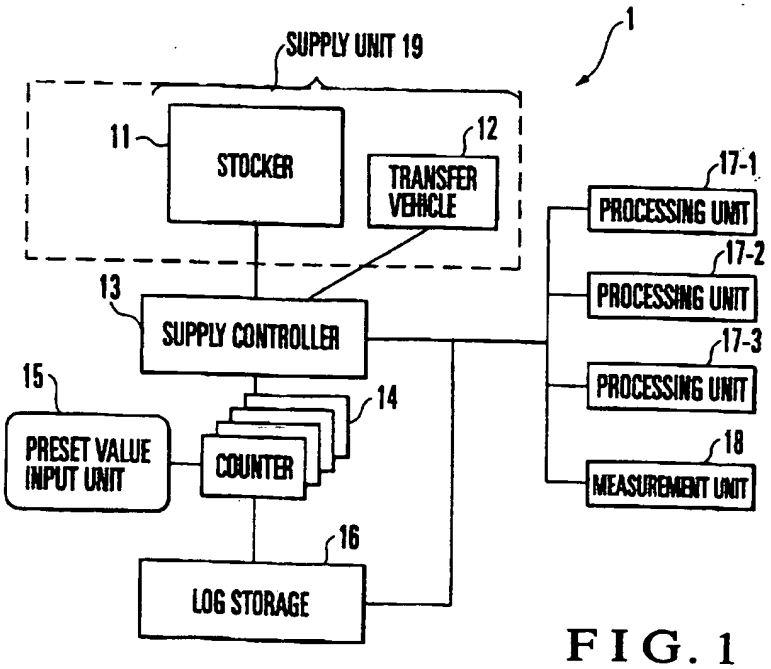

FIG. 1

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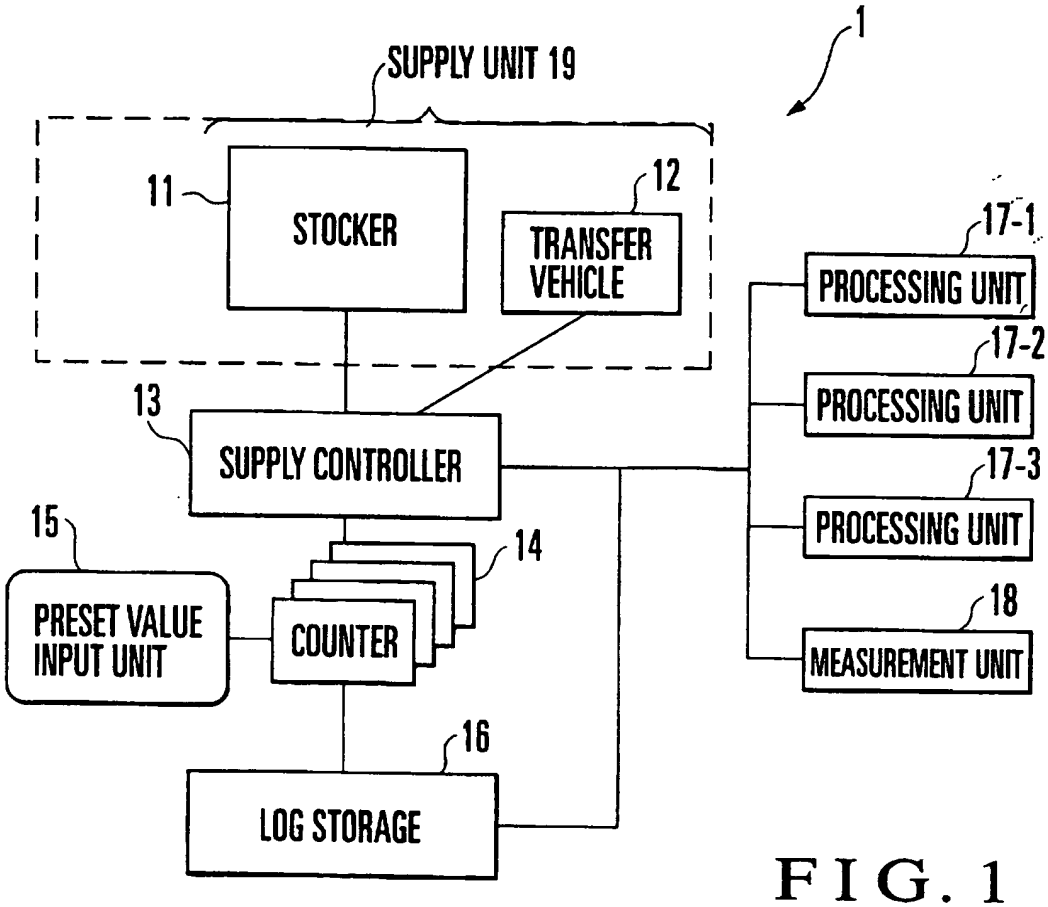
1
SUPPLY UNIT 19
11
STOCKER
12
TRANSFER VEHICLE
17-1
PROCESSING UNIT
17-2
PROCESSING UNIT
17-3
PROCESSING UNIT
18
MEASUREMENT UNIT
13
SUPPLY CONTROLLER
15
PRESET VALUE INPUT UNIT
14
COUNTER
16
LOG STORAGE

FIG. 1

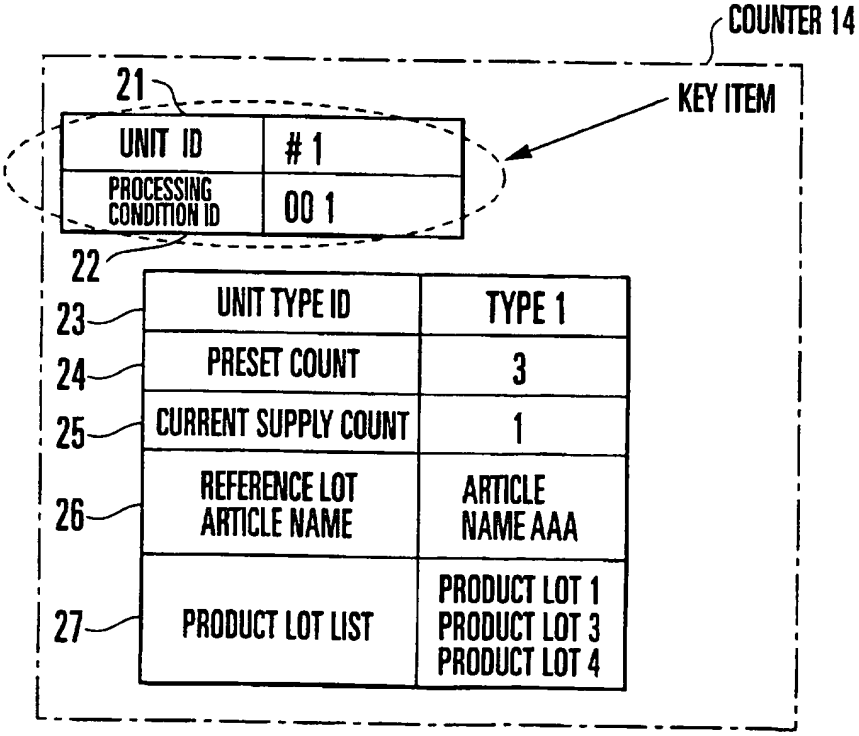
COUNTER 14
21
KEY ITEM
UNIT ID
1
PROCESSING CONDITION ID
00 1
22
23
UNIT TYPE ID
TYPE 1
24
PRESET COUNT
3
25
CURRENT SUPPLY COUNT
1
26
REFERENCE LOT ARTICLE NAME
ARTICLE NAME AAA
27
PRODUCT LOT LIST
PRODUCT LOT 1
PRODUCT LOT 3
PRODUCT LOT 4

FIG. 2

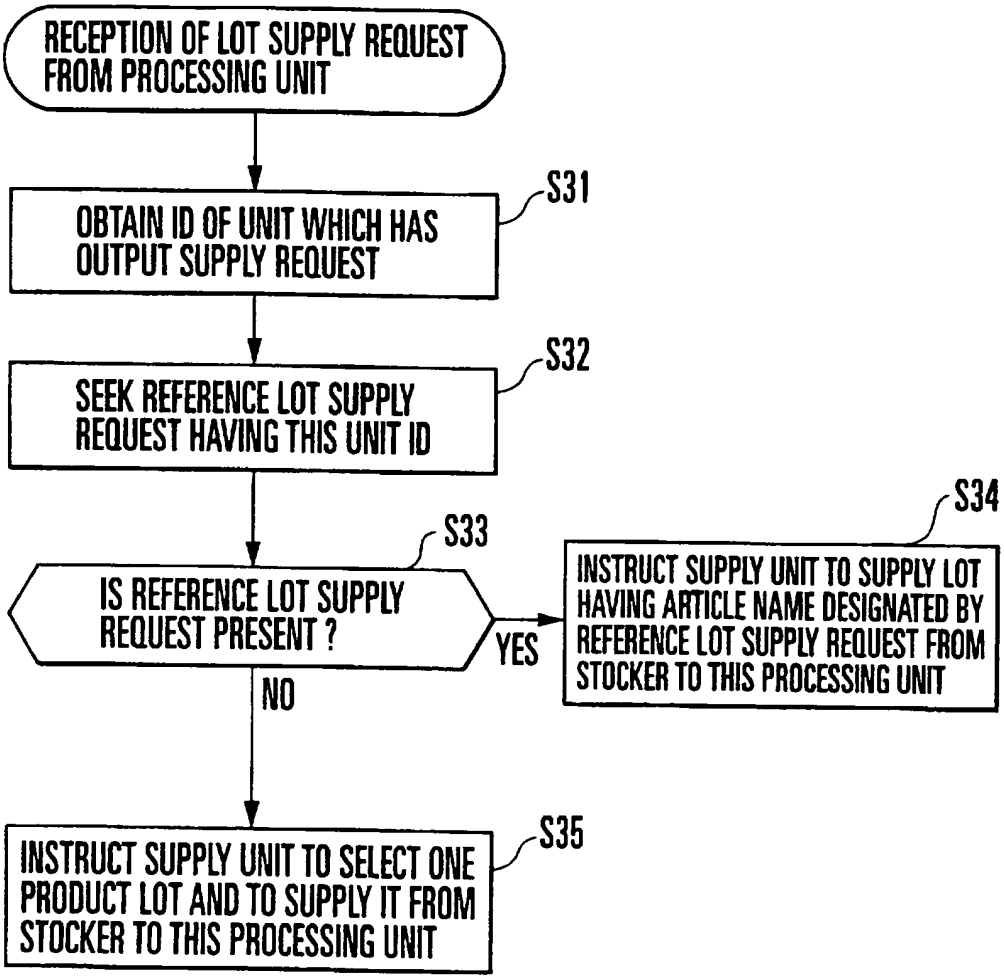
RECEPTION OF LOT SUPPLY REQUEST FROM PROCESSING UNIT
OBTAIN ID OF UNIT WHICH HAS OUTPUT SUPPLY REQUEST
S31
SEEK REFERENCE LOT SUPPLY REQUEST HAVING THIS UNIT ID
S32
IS REFERENCE LOT SUPPLY REQUEST PRESENT ?
S33
YES
INSTRUCT SUPPLY UNIT TO SUPPLY LOT HAVING ARTICLE NAME DESIGNATED BY REFERENCE LOT SUPPLY REQUEST FROM STOCKER TO THIS PROCESSING UNIT
S34
NO
INSTRUCT SUPPLY UNIT TO SELECT ONE PRODUCT LOT AND TO SUPPLY IT FROM STOCKER TO THIS PROCESSING UNIT
S35

FIG. 3

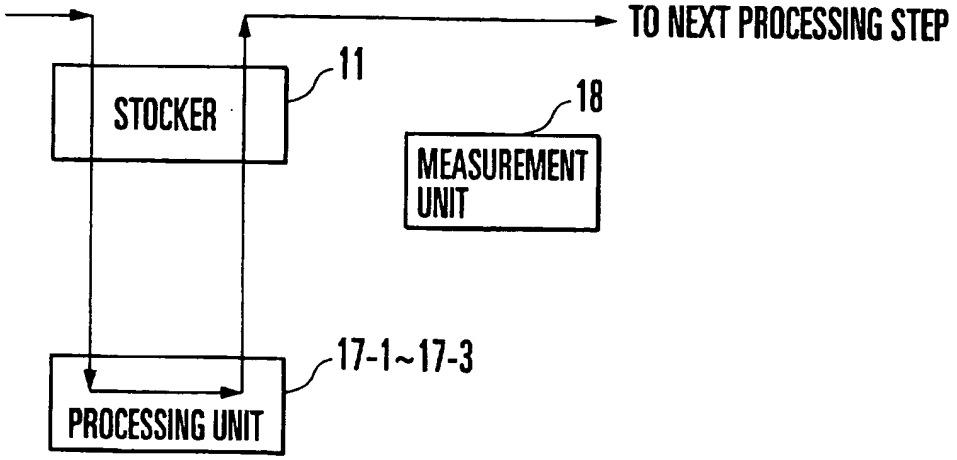
TO NEXT PROCESSING STEP
11
STOCKER
18
MEASUREMENT UNIT
17-1~17-3
PROCESSING UNIT

FIG. 4

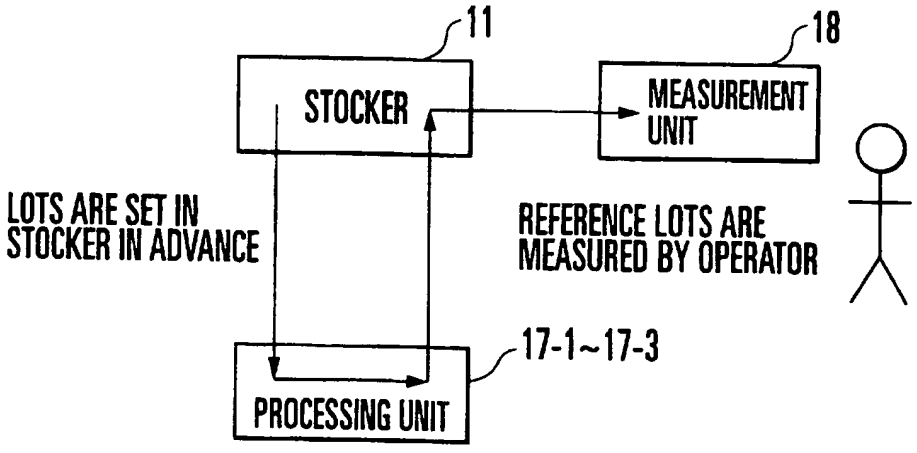
11
18
STOCKER
MEASUREMENT UNIT
LOTS ARE SET IN STOCKER IN ADVANCE
REFERENCE LOTS ARE MEASURED BY OPERATOR
17-1~17-3
PROCESSING UNIT

FIG. 5

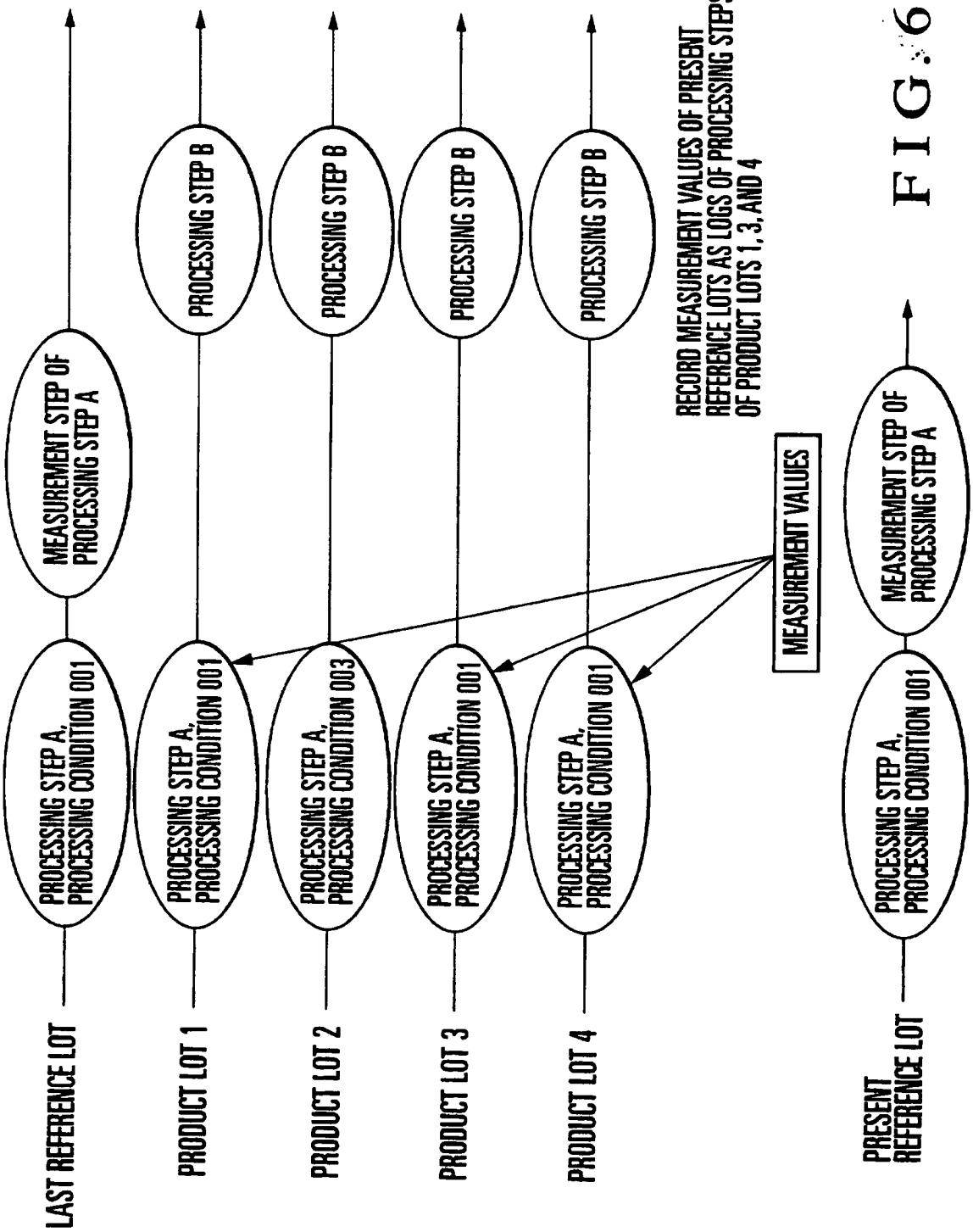
LAST REFERENCE LOT
PROCESSING STEP A, PROCESSING CONDITION 001
MEASUREMENT STEP OF PROCESSING STEP A
PRODUCT LOT 1
PROCESSING STEP A, PROCESSING CONDITION 001
PROCESSING STEP B
PRODUCT LOT 2
PROCESSING STEP A, PROCESSING CONDITION 003
PROCESSING STEP B
PRODUCT LOT 3
PROCESSING STEP A, PROCESSING CONDITION 001
PROCESSING STEP B
PRODUCT LOT 4
PROCESSING STEP A, PROCESSING CONDITION 001
PROCESSING STEP B
MEASUREMENT VALUES
RECORD MEASUREMENT VALUES OF PRESENT REFERENCE LOTS AS LOGS OF PROCESSING STEPS A OF PRODUCT LOTS 1, 3, AND 4
PRESENT REFERENCE LOT
PROCESSING STEP A, PROCESSING CONDITION 001
MEASUREMENT STEP OF PROCESSING STEP A

FIG. 6

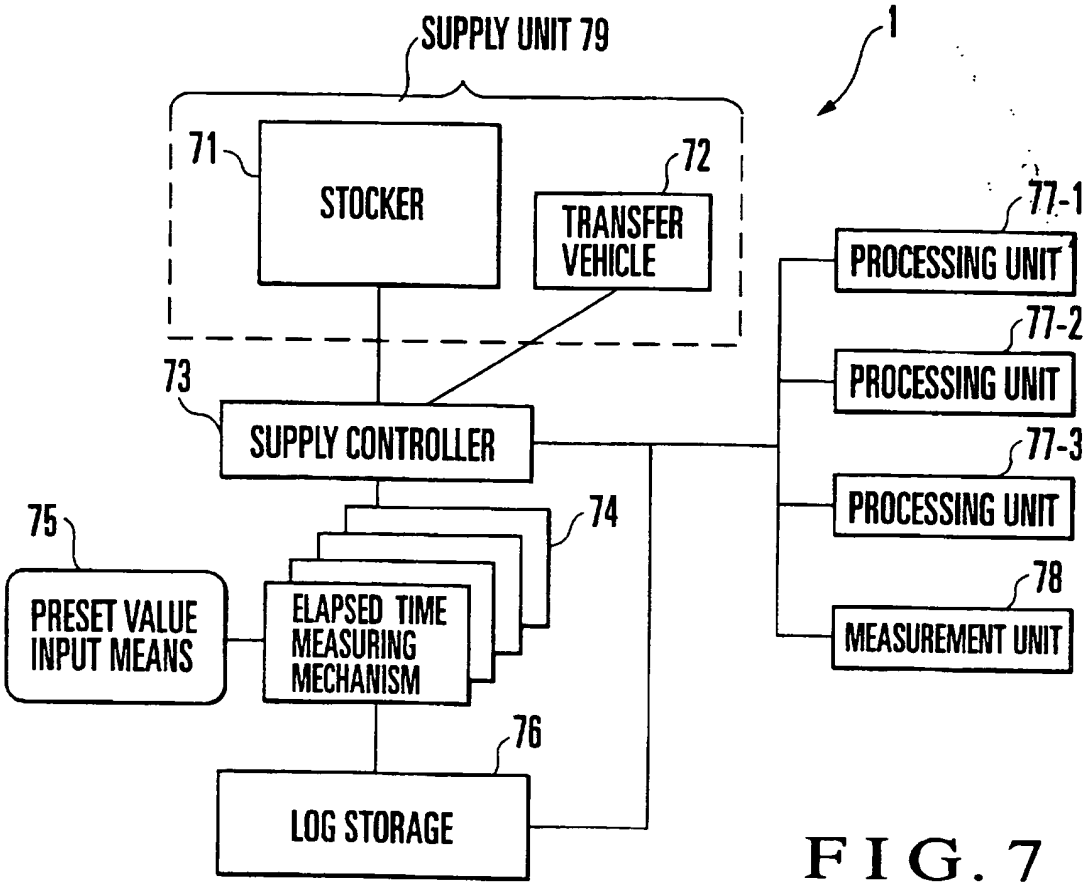
SUPPLY UNIT 79
1
71
STOCKER
72
TRANSFER VEHICLE
77-1
PROCESSING UNIT
77-2
PROCESSING UNIT
77-3
PROCESSING UNIT
78
MEASUREMENT UNIT
73
SUPPLY CONTROLLER
74
75
PRESET VALUE INPUT MEANS
ELAPSED TIME MEASURING MECHANISM
76
LOG STORAGE

FIG. 7

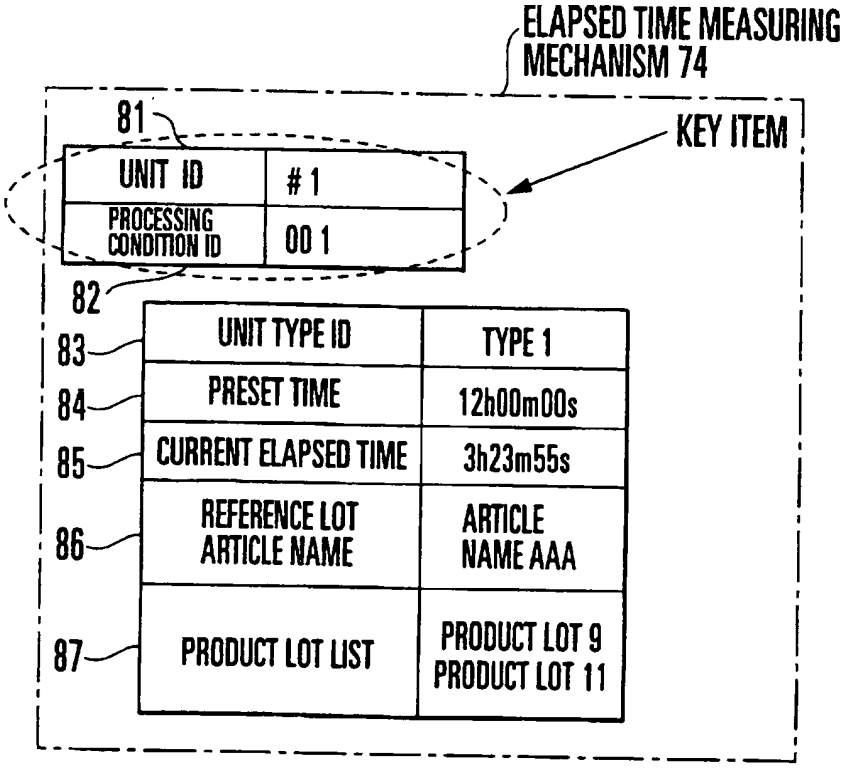
ELAPSED TIME MEASURING MECHANISM 74
81
KEY ITEM
UNIT ID
1
PROCESSING CONDITION ID
00 1
82
83
UNIT TYPE ID
TYPE 1
84
PRESET TIME
12h00m00s
85
CURRENT ELAPSED TIME
3h23m55s
86
REFERENCE LOT ARTICLE NAME
ARTICLE NAME AAA
87
PRODUCT LOT LIST
PRODUCT LOT 9
PRODUCT LOT 11

FIG. 8

LOT SUPPLY SYSTEM AND LOT SUPPLY METHOD

The present invention relates to a lot supply system and a lot supply method. A particular lot supply system and lot supply method, which are suitable for application to a production line in which material processing in a clean atmosphere is required, for example, as in the pre-processing step in the manufacture of semiconductor devices, will be described below, by way of example in illustration of the present invention.

Various types of lot supply systems have previously been proposed in which, for example, a product lot is supplied to a unit in a processing step, the lot is recovered after it has been processed by the unit in the processing step, and the recovered lot is supplied to a unit in a measurement stage.

As an example of a previously proposed lot supply system, reference is made to a technique described in Japanese Patent Laid-Open publication No. 10-116875 entitled "Semiconductor Production System". The semiconductor production system of this patent publication aims at shortening the period of time for the production of semiconductor wafers, and employs a plurality of processing units for processing semiconductor wafers in a lot, a stock holding means for storing a lot, except the lot being processed in the processing units, and a plurality of non-processing units provided in association with the stock holding means to perform either one of the operations of inspection, measurement, and foreign matter removal, other than the processing of the semiconductor wafers in the lot. In this system, the non-processing of the semiconductor wafers in the lot is carried out by the non-processing units while the lot is stored in the stock holding

means.

The previously proposed arrangements have the following problems.

In a previously proposed lot supply system, as described above, the product lot is supplied to the unit in the processing step, the lot is recovered after it has been processed by this unit, and the recovered lot is supplied to the unit in the measurement step. Since the measurement step is not generally automated, it requires manual operation. Hence, in the measurement step, every time that a measurement operation is performed, the operator needs access to the product lot. In particular, in the manufacturing process of semiconductor wafers and the like, dust from the operator affects the product lot and interferes with an increase in product yield.

A feature of an arrangement to be described below by way of example in illustration of the present invention is that there are a lot supply system and lot supply method in which the product lot is protected from dust from an operator so that the product yield is increased.

In a particular arrangement to be described below, by way of example in illustration of the present invention, there is a lot supply system which includes a plurality of processing units for outputting a lot supply request and for performing a predetermined process upon a lot supplied thereto, a lot supply unit for supplying a lot stored therein to units requesting processing, in response to a lot supply request from the processing units, a plurality of counting means for counting the product lots supplied to the units requesting processing, at least in units of the units requesting processing, and supply control means for, when counts of the counting means reach preset values set in units of the units requesting processing, supplying measurement lots stored in advance to the requesting processing units and initializing counts of the counting means.

Arrangements which are illustrative of the invention will now be described, by way of example, with reference to the accompanying drawings in which:-

Fig. 1 is a block schematic diagram for use in describing one arrangement of a lot supply system,

Fig. 2 is a table for use in describing the internal structure of a counter shown in Fig. 1,

Fig. 3 is a flow chart for use in describing the operation of the lot supply system shown in Fig. 1,

Fig. 4 is a flow diagram for use in describing the flow of a product lot in the lot supply system shown in Fig. 1,

Fig. 5 is a flow diagram for use in describing the flow of a reference lot in the lot supply system shown in Fig 1,

Fig. 6 is a diagrammatic illustration for use in describing the distribution of measurement values in the lot supply system shown in Fig. 1,

Fig. 7 is a block schematic diagram for use in describing another arrangement of a lot supply system, and

Fig. 8 is a table for use in describing the internal structure of an elapsed time measuring mechanism shown in Fig. 7.

Referring to Fig. 1, a lot supply system 1 of this arrangement has a stock holding means (stocker) 11 for storing lots, a transfer vehicle 12 for transferring the lots, a supply controller 13 for controlling the supply of lots held by the stock holding means 11 and transferred by the transfer vehicle 12, a plurality of counters 14 for counting the number of lots supplied in units of the units requesting processing, a preset value input unit 15 for inputting preset values to the counters 14, and a storage log 16 for storing a log of the lot supply. The stock holding means 11 and the transfer vehicle 12 are included in a supply unit 19. A plurality of processing units 17-1 to 17-3 is connected to the lot supply system 1 to carry out various types of

processes for the lots. A measurement unit 18 is connected to the lot supply system 1 to measure a lot (reference lot)

In the case of semiconductor integrated circuits, a predetermined number of wafers is treated as one lot. When a plurality of transistors is produced from one wafer, the plurality of transistors produced from one wafer is treated as one lot, and the number of transistors constituting one lot is not limited to a specific value. The arrangement shown in Fig. 1 is merely an example, and the number of processing units connected to the supply unit 19 is not limited to that shown in Fig. 1.

The stock holding means 11 has the function of storing in it a lot which is placed on a load port (not shown) attached to the stock holding means 11 by the transfer vehicle 12. The stock holding means 11 has the function of reporting a reference code or identification code (ID) of the lot to the supply controller 13 when the storing operation is started. The stock holding means 11 also has the function of taking out a lot and moving it to the load port where the transfer vehicle 12 can receive the lot in response to an instruction from the supply controller 13. The stock holding means further has the function of reporting to the supply controller 13 that the transfer of the lot to the load port has been completed.

The transfer vehicle 12, which is a part of the supply unit 19, has the function of transferring the lots from the load port of the stock holding means 11 to the processing units 17-1 to 17-3, or to the measurement unit 18, from the processing units 17-1 to 17-3 to the load port of the stock holding means 11 or to the measurement unit 18, and from the measurement unit 18 to the load port of the stock holding means 11, or the processing units 17-1 to 17-3, in response to an instruction from the supply controller 13.

The supply controller 13 is connected to the supply unit 19, the processing units 17-1 to 17-3, and the measurement unit 18 through communication lines. The supply controller 13 has the function of checking

the current positions of the respective lots, and advancing by one the step for a lot which ends upon the receipt of a communication message with the information that the process carried out by the processing units 17-1 to 17-3 has ended, or that the measurement by the measurement unit 18 has ended. The supply controller 13 also has the function of comparing the step for the lot with the ID's of the processing units 17-1 to 17-3 and the measurement unit 18 upon the receipt of lot supply requests from the processing units 17-1 to 17-3 and the measurement unit 18, to check whether the next step for the lot is a step that can be processed by the processing units 17-1 to 17-3, or measured by the measurement unit 18. The supply controller 13 further has the functions, when there are a plurality of lots that can be processed or measured, of instructing the supply unit 19 to select one from these lots, and instructing its transfer to the supply requesting processing units 17-1 to 17-3 or the measurement unit 18.

The supply controller 13 has the function, when instructing the transfer of a selected lot, of instructing a count-up to a counter 14 specified by the ID of a supply target unit, and the processing condition ID of the selected lot, and informing the counter of the ID of the lot which it has instructed should be supplied. The supply controller 13 has the function of storing the article name of a reference lot (measurement lot), the unit ID, and the processing condition ID instructed by the counter 14 as a reference lot supply request. The supply controller 13 also has the function of instructing the supply unit 19 to supply lots corresponding to the product names of the reference lots designated by the reference lot supply request to the requesting processing units 17-1 to 17-3 upon the receipt of a lot supply request from a processing unit having a unit ID for which a reference lot supply request is made. The supply controller 13 further has the function of deleting a corresponding reference lot supply request, clearing the "preset count" of the counter designated by the reference lot supply request to zero, and providing information regarding the ID of this reference lot when the supply instruction is made.

The reference lot is a lot which has undergone the same

processing steps as those for a target lot which is to be processed in, e.g., the manufacturing line or packaging line, so that it can be compared with the process target lot. The number of reference lots can be one or more. The reference lots are fabricated under the same conditions and have the same characteristics, quality, and the like as the target or product lot. The measurement values of the reference lots are used in place of the measurement values of the product lots, as will be described later with reference to Fig. 6. A processed reference lot, e.g., a reference lot having a particular thickness of semiconductor film, an insulating film, or the like, may be etched and cleaned so that it can be used again as a reference lot.

Upon the receipt of a lot supply request from the processing units 17-1 to 17-3, the supply controller 13 carries out a process to be described below with reference to the flow chart of Fig. 3.

The processing units 17-1 to 17-3 are connected to the lot supply system 1, as described above, and execute a predetermined process upon the product lots supplied from the lot supply system on the basis of the lot supply request made by them. The measurement unit 18 is connected to the lot supply system, as described above, and carries out predetermined measurements on the reference lot supplied from the lot supply system.

Reference is now made to Fig. 2, which shows the internal structure of each counter 14 shown in Fig. 1. As shown in Fig. 2, the counter 14 includes the following items:

- "unit ID" 21
- "processing condition ID" 22
- "unit type ID" 23
- "preset count" 24
- "current supply count" 25
- "reference lot article name" 26 and
- "product lot list" 27

The counters 14 exist in units of combinations of the "unit ID" 21 and the "processing condition ID" 22. Accordingly, when the combination of the "unit ID" 21 and the "processing condition ID" 22 is determined, one

specific counter 14 is uniquely determined. In the item of the "unit type ID" 23, an ID indicating the type of the "unit ID" 21 is set. The counter 14 has the function of receiving a count-up request from the supply unit 19 and incrementing the "current supply count" 25. The counter 14 also has the function of informing the supply controller 13 of the "unit ID" 21 of its own, "processing condition ID" 22, and the "reference lot article name" 26 when the "current supply count" 25 and the "preset count" 24 become equal.

As the "product lot list" 27, a plurality of product lot IDs are recorded. The counter 14 has the function of adding a product lot ID notified by the supply controller 13 to the "product lot list" 27. The counter 14 has the function, when informed of the reference lot ID by the supply controller 13, of informing the log storage 16 of the informed reference lot ID and all the product lot ID's recorded in the "product lot list" 27 at once, and clearing the "product lot list" 27.

The preset value input unit 15 has the function of designating a specific "unit ID" 21 and the "processing condition ID" 22 to select a corresponding counter 14, and of inputting the "preset count" 24 of the selected counter 14 and the "reference lot article name" 26 through an operator. The preset value input unit 15 also has the function of designating a specific "unit type ID" 23 and the "processing condition ID" 22 to select all the counters 14 designated by all "unit ID's" 21 belonging to this unit type and the "processing condition ID" 22, and of inputting the "preset counts" 24 of the selected counter group and the "reference lot article name" 26 through an operator.

The log storage 16 has the function of storing the combination of the reference lot ID and a plurality of product lot ID's notified by the counter 14. The log storage 16 also has the function of receiving a process start report and a process end report from the processing units 17-1 to 17-3 and storing a process log including the reporting processing unit ID, the ID

of the processed lot, the process start time, and the process end time. The log storage 16 further has the function of receiving the measurement result data of the reference lot and the lot ID from the measurement unit 18, obtaining the ID (generally a plurality of ID's) of the corresponding product lot by using the received combination of the lot ID's, and copying the measurement result data to register it in the log of the processing units of the corresponding product lot group.

Upon the receipt of a lot supply request, the supply controller 13 in the lot supply system 1 described above will operate as described below with reference to the flow chart shown in Fig. 3.

The supply controller 13 obtains the "unit ID" 21 of a processing unit which has output a lot supply request (step S31) , and seeks a reference lot supply request having the obtained "unit ID" 21 (step S32) When it is determined that a reference supply request is present, the supply controller 13 instructs the supply unit 19 to supply a lot having an article number designated by the reference lot supply request to the requesting processing unit (step S34) . In step S33, if it is determined that the reference lot supply request is not present, the supply controller 13 instructs the supply unit 19 to select one product lot, and to supply it from the stock holding means 11 to the requesting processing unit (step S35).

The lot supply control operation of the lot supply system described above will now be described with reference to Figs. 4 to 6.

Prior to operating the system, the "preset count" 24 of the counter 14 and the "reference lot article name" 26 corresponding to the specific "unit ID" 21 and "processing condition ID" 22 are set in advance. Assume that the "current number of times of process" of the counter 14 is "0", the "product lot list" 27 is empty, and the supply controller 13 has no reference lot supply request. The system is operated in this state. For the sake of descriptive convenience, assume that the "unit ID" 21 is "#1" and

that the "processing condition ID" 22 is "001".

Note that the step flow of the product lot is only a process step and does not include a measurement step, as shown in Fig. 4, and that the step flow of the reference lot includes both the process step and measurement step, as shown in Fig. 5.

When the processing units 17-1 to 17-3 ("#1") are set in a condition capable of accepting lots, they request the lots from the supply controller 13. The supply controller 13 checks whether the requesting processing units 17-1 to 17-3 have reference lot supply requests, as described with reference to Fig. 3. If no, the supply controller 13 selects appropriate product lots from the stock holding means 11 and instructs the supply unit 19 to supply them to the requesting processing units17-1 to 17-3. In this case, assume that the "processing condition ID" 22 of the selected lots is "001". The supply controller 13 increments the "current supply counts" 25 of the counters 14 designated by the requesting "unit ID's" 21 (= "#1") and the "processing condition ID's" 22 (= "001") from "0" to "1". Furthermore, the supply controller 13 registers the ID's of the selected lots in the "product lot lists" 27 of the corresponding counters 14.

In this manner, the "current supply count" 25 of the counter 14 is incremented only when a lot having a "processing condition ID" = "001" is supplied to the requesting processing unit. Every time a lot having "001" as the "processing condition ID" 22 is supplied to the requesting processing unit ("#1") , the "current supply count" 25 of the corresponding counter 14 is incremented by one to become equal finally to the value of the "preset count" 24. In this case, the counter 14 informs the supply controller 13 of the "unit ID" 21 (= "#1") of its own, "processing condition ID" 22 (= "001"), and "reference lot article name" 26. The supply controller 13 receives this information and forms a reference lot supply request in it.

Upon the receipt of a lot supply request, as described with

reference to Fig. 3, when the supply controller 13 finds a reference lot supply request, it instructs the supply unit 19 to seek a lot belonging to the "reference lot article name" 26 designated by the reference lot supply request from the stock holding means 11 and to supply it. In this case, this reference lot supply request is deleted, and the "current supply count" 25 of the corresponding counter 14 is cleared to zero. The supply controller 13 also informs the corresponding counter 14 of the ID of the lot which it has been instructed should be supplied. The counter 14 informs the log storage 16 of the ID's of the plurality of product lots which have been registered in the "product lot list" 27 until this time point, and the reference lot ID informed by the supply controller 13, and clears all the ID's of the product lots from the "product lot list" 27.

The processing units 17-1 to 17-3 then process the supplied reference lots. After the process has ended, the reference lots are supplied to the measurement unit 18 by the supply controller 13 and the supply unit 19. The operator operates the measurement unit 18 to measure the reference lots. When the measurement has been completed, the measurement unit 18 informs the log storage 16 of the measurement data and the reference lot ID.

From the informed reference lot ID's, the log storage 16 obtains a plurality of product lot ID's on the basis of the correspondence between the reference lot ID and the plurality of product lot ID's notified in advance. The measurement data is recorded as the logs of the process steps of these lots. As a result, the measurement results of the reference lots are distributed to the product lots which are processed by the requesting processing units 17-1 to 17-3 with the processing conditions "001", after the process of the previous reference lot until the process of the present reference lot, as shown in Fig. 6.

In this first arrangement, in place of the product lots, the

reference lots are subjected to the measurement steps, and the measurement results are distributed to the logs of the product lots by the lot supply system. Even if the measurement step should need an operator, the operator and the product lots can be separated, so that the product yield can be improved.

Fig. 7 shows the schematic arrangement of a second arrangement of a lot supply system. Referring to Fig. 7, a lot supply system 1 of this arrangement has a stock holding means 71, a transfer vehicle 72, a supply controller 73, a plurality of elapsed time measuring mechanisms 74, preset value input means 75, and a log storage 76. Processing units 77-1 to 77-3 are connected to the lot supply system 1. A measurement unit 78 is connected to the lot supply system 1. The arrangement shown in Fig. 7 is merely an example, and the number of processing units connected to the lot supply system 1 is not limited to that shown in Fig. 7.

The second arrangement is different from the first arrangement in that the plurality of elapsed time measuring mechanisms 74 are provided to the lot supply system 1 in place of the plurality of counters 14 shown in Fig. 1.

Fig. 8 shows the internal structure of each elapsed time measuring mechanism 74 shown in Fig. 7. As shown in Fig. 7, the elapsed time measuring mechanism 74 has the following items:

- "unit ID" 81
- "processing condition ID" 82
- "unit type ID" 83
- "preset count" 84
- "current elapsed time" 85
- "reference lot article name" 86
- "product lot list" 87

The elapsed time measuring mechanisms 74 exist in units of combinations of the "unit ID" 81 and the "processing condition ID" 82. Accordingly, when the "unit ID" 81 and "processing condition ID" 82 are determined, one specific elapsed time measuring mechanism 74 is uniquely determined. The elapsed time measuring mechanism 74 has a timer. The mechanism 74 has the function of displaying an elapsed time elapsed since the timer is reset to the "current elapsed time" 85. The mechanism 74 also has the function of constantly monitoring the "current elapsed time" 85 and the "preset time" 84, and when the "current elapsed time" 85 and "preset time" 84 become equal to each other, informing the supply controller 73 of the "unit ID" 81 of its own "processing condition ID" 82, and the "reference lot article name" 86.

The elapsed time measuring mechanism 74 has the function of adding a product lot ID notified by the supply controller 73 to the "product lot list" 87. The elapsed time measuring mechanism 74 also has the function, when informed of the reference lot ID by the supply controller 73, of informing the log storage 76 of the informed reference lot ID and all the product lot IDs recorded in the "product lot list" 87 at once, and clearing the "product lot list" 87.

In this arrangement, since the reference lots are supplied to the processing units 77-1 to 77-3 at a predetermined time interval, the processing results of the processing units 77-1 to 77-3 can actually be measured by the measurement unit 78 at a predetermined time interval. Hence, this system is suitable for monitoring a measurement value which changes mainly over time.

The operation of the lot supply system 1 described above will now be described in detail.

The elapsed time measuring mechanisms 74 measure a time

elapsed since the time at which the last measurement lot was supplied, in units of combinations of the processing units 77-1 to 77-3 and the lot processing conditions or in units of the processing units 77-1 to 77-3. The supply controller 73 supplies the reference lots to the processing units 77-1 to 77-3 at the predetermined time interval measured by the elapsed time measuring mechanisms 74. Therefore, the processing results of the processing units 77-1 to 77-3 can actually be measured by the measurement unit 78 at the predetermined time interval.

In this arrangement, since the reference lots are supplied to the processing units 77-1 to 77-3 at the predetermined time interval, the processing results of the processing units 77-1 to 77-3 can actually be measured by the measurement unit 78 at the predetermined time interval. This arrangement is suitable when monitoring a measurement value which changes mainly over time.

Regarding the reference lot of this arrangement, for example, in the case of a process of forming an insulating film on a semiconductor wafer, an insulating film is formed with the same conditions as those for other product lots. After the reference lot has been formed, it is measured by the measurement unit 78, and the measurement result is stored. After that, the insulating film is removed from the reference lot by etching, CMP, (Chemical Mechanical Polishing) , or the like. The reference lot is then cleaned, is subjected to a manufacturing process with the same conditions as those for other product lots again, and is treated as the reference lot.

As has been described above, in place of the product lots, the reference lots may be subjected to a measurement step, and the measurement results are distributed to the logs of the product lots by the lot supply system. More specifically, the measurement of the product lots is substituted by the measurement of the measurement lots, and the

measurement results of the measurement lots are reflected in the processing logs of the product lots. Even if the measurement step needs an operator, the operator and the product lots can be separated reliably. As a result, the product lots can be protected against dust from the operator, whereby the product yield can be improved.

It will be understood that, although particular arrangements have been described, by way of example in illustration of the invention, variations and modifications thereof, as well as other arrangements may be made within the scope of the appended claims.

CLAIMS

1. A lot supply system including a plurality of processing units for outputting a lot supply request and carrying out a predetermined process upon a lot supplied thereto, a lot supply unit for supplying a lot stored therein to requesting processing units, in response to the lot supply request from the processing units, a plurality of counting means for counting product lots supplied to the requesting processing units at least in units of the requesting processing units, and supply control means for, when counts of the counting means reach preset values set in units of the requesting processing units, supplying measurement lots stored in advance to the requesting processing unit, and initializing the counts of the counting means.

2. A system as claimed in claim 1, in which the plurality of counting means count the product lots supplied to the requesting processing units in units of types of the requesting processing units, and the supply control means supplies the measurement lots stored in advance to the requesting processing units when the counts of the counting means reach the preset values set in units of the types of the requesting processing units.

3. A system as claimed in claim 1, in which the plurality of counting means count the product lots supplied to the requesting processing units in units of combinations of the requesting processing units and lot processing conditions, and the supply control means supplies the measurement lots stored in advance to the requesting processing units when the counts of the counting means reach the preset values set in units of combinations of the lot processing conditions and either one of the requesting processing units and the types of the requesting processing units.

4. A system as claimed in claim 1, including log storage means for receiving measurement data of the measurement lots from the requesting processing units, and storing the received measurement data as logs of product lots processed by the requesting processing units since the last supply of the measurement lots until the present supply of the measurement lots.

5. A system as claimed in claim 1, in which the counting means inform the supply control means of the ID's of the requesting processing units, an ID of the lot processing conditions, and the article names of the measurement lots when a present number of times of lot supply and a preset number of times become equal to each other.

6. A lot supply system including a plurality of processing units for outputting a lot supply request and carrying out a predetermined process upon a lot supplied thereto, a lot supply unit for supplying a lot stored therein to requesting processing units in response to the lot supply request from the processing units, elapsed time measuring means for measuring an elapsed time which has elapsed since the time at which a last measurement lot was supplied at least in units of the requesting processing units, and supply control means for, when a measurement value of the elapsed time measuring means exceeds preset values set in units of the requesting processing units, supplying measurement lots stored in advance to the requesting processing unit, and initializing the values of the elapsed time measuring means.

7. A system as claimed in claim 6, in which the elapsed time measuring means measures the elapsed time which has elapsed since the time at which the last measurement lot was supplied in units of types of the requesting processing units, and the supply control means supplies the measurement lots stored in advance to the requesting processing units when

the measurement value of the elapsed time measuring means exceeds the preset values set in units of the types of the requesting processing units.

8. A system as claimed in claim 6, in which the elapsed time measuring means measures the elapsed time which has elapsed since the last measurement lot was supplied in units of combinations of lot processing conditions and one of the requesting processing units and the types of the requesting lot processing units, and the supply control means supplies the measurement lots stored in advance to the requesting processing units when the measurement value of the elapsed time measuring means exceeds the preset values set in units of the requesting processing units, in units of combinations of the lot processing conditions and one of the requesting processing units and the types of the requesting processing units.

9. A system as claimed in claim 6, including log storage means for receiving measurement data of the measurement lots from the requesting processing units, and storing the received measurement data as logs of product lots processed by the requesting processing units since the last supply of the measurement lots until the present supply of the measurement lots.

10. A system as claimed in claim 6, in which the elapsed time measuring means informs the supply control means of the ID's of the requesting processing units, an ID of the lot processing conditions, and the article names of the measurement lots when a present elapsed time and the preset time become equal to each other.

11. A lot supply method including the steps of outputting to a supply unit a lot supply request from a plurality of processing units which carry out a predetermined process for a lot supplied thereto, supplying a lot stored in the supply unit to requesting processing units in response to the lot supply

request, counting product lots supplied to the requesting processing units at least in units of the requesting processing units, supplying measurement lots stored in the supply unit in advance to the requesting processing unit when counts of the supplied product lots reach preset values set in units of the requesting processing units, and initializing the counts in units of the requesting processing units.

12. A method as claimed in claim 11, including the steps of receiving measurement data of the measurement lots from the requesting processing units, and storing the received measurement data as logs of product lots processed by the requesting processing units since the last supply of the measurement lots until the present supply of the measurement lots.

13. A lot supply system as claimed in claim 1 or claim 6, substantially as described herein with reference to Figs. 1 to 6 or Figs. 7 and 8 of the accompanying drawings.

14. A method as claimed in claim 11 substantially as described herein with reference to Figs. 1 to 6 or Figs. 7 and 8 of the accompanying drawings.

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Other: Online databases: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	GB 2126374 A	(NEC Corporation)	-
A	WO 98/54632 A1	(Castrucci p p et al)	-
A, P	JP 110354397	(Hitachi Limited) 24/12/1999 see WPI Abstract Accession No. 2000-122227 [11]	-

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